CLAIMS

THAT WHICH IS CLAIMED IS:

1. A method of transmitting comprising:

generating an interference-compensated information symbol from a source information symbol based on knowledge of an information symbol and a first code used to generate a first coded signal; and

concurrently transmitting the first coded signal and a second coded signal representing the interference-compensated information symbol encoded according to a second code.

2. The method according to Claim 1:

wherein generating an interference-compensated information symbol from a source information symbol based on knowledge of an information symbol and a first code used to generate a first coded signal is preceded by generating a first composite signal from at least one information symbol according to at least one code from a first group of codes of a set of quasi-orthogonal codes;

wherein generating an interference-compensated information symbol from a source information symbol based on knowledge of an information symbol and a first code used to generate a first coded signal comprises generating a first interference-compensated information symbol from a first information symbol, the first composite signal and a code from a second group of codes of the set of quasi-orthogonal codes; and

wherein the second coded signal represents the first interference-compensated information symbol encoded according to the code from the second group of codes.

3. The method according to Claim 2, wherein generating a first interference-compensated information symbol from a first information symbol, the first composite signal and a code from a second group of codes of the set of quasi-orthogonal codes comprises:

integrating a product of the first composite signal and the complex conjugate of the code from the second group of codes over a symbol interval;

scaling the integrated product by a scaling factor; and

subtracting the scaled integrated product from the first information symbol to generate the first interference-compensated information symbol.

4. The method according to Claim 3, wherein scaling the integrated product by a scaling factor is preceded by:

determining respective first and second numbers of codes from the first group of codes and codes from the second group of codes to be used to transmit information symbols for the symbol interval; and

determining the scaling factor based on the determined first and second numbers.

5. The method according to Claim 4, wherein determining the scaling factor based on the determined first and second numbers comprises determining the scaling factor from the determined first and second numbers using a signal quality criterion.

6. The method according to Claim 5, wherein determining the scaling factor from the determined first and second numbers using a signal quality criterion comprises selecting the scaling factor such that it produces substantially equal estimated signal to interference ratios for signals coded according to the first and second codes.

7. The method according to Claim 2:

wherein the first coded signal is the first composite signal;

wherein concurrently transmitting the first coded signal and a second coded signal representing the interference-compensated information symbol encoded according to a second code is preceded by :

encoding the first interference-compensated symbol according to the code from the second group of codes to produce the second coded signal; and

combining the first composite signal and the second coded signal to produce a combined signal; and

wherein concurrently transmitting the first coded signal and a second coded signal representing the interference-compensated information symbol encoded according to a second code comprises transmitting the combined signal.

8. The method according to Claim 2:

wherein concurrently transmitting the first coded signal and a second coded signal representing the interference-compensated information symbol encoded according to a second code is preceded by :

identifying at least one information symbol to be transmitted using at least one code from the second group of codes;

generating a second composite signal from the at least one information symbol to be transmitted using the at least one code from the second group of codes according to the at least one code from the second group of codes; and

generating a second interference-compensated information symbol from a second information symbol, the second composite signal and a code from the first group of codes; and

wherein the first coded signal represents the second interference-compensated information symbol encoded according to the code from the first group of codes.

9. The method according to Claim 8:

wherein concurrently transmitting the first coded signal and a second coded signal representing the interference-compensated information symbol encoded according to a second code is preceded by :

encoding the second interference-compensated information symbol according to the code from the first group of codes to produce the first coded signal; and

combining the first and second coded signals to produce a combined signal; and

wherein concurrently transmitting the first coded signal and a second coded signal representing the interference-compensated information symbol encoded according to a second code comprises transmitting the combined signal.

10. The method according to Claim 8, wherein generating a second interference-compensated information symbol from a second information symbol comprises :

integrating a product of the second composite signal and the complex conjugate of the code from the first group of codes over a symbol interval;

scaling the integrated product by a scaling factor; and

subtracting the scaled integrated product from the second information symbol to generate the second interference-compensated information symbol.

11. The method according to Claim 10, wherein scaling the integrated product by a scaling factor is preceded by :

determining respective first and second numbers of codes from the first group of codes and codes from the second group of codes to be used to transmit information symbols for the symbol interval; and

determining the scaling factor based on the determined first and second numbers.

12. The method according to Claim 11, wherein determining the scaling factor based on the determined first and second numbers comprises determining the scaling factor from the first and second numbers based on a signal quality criterion.

13. The method according to Claim 12, wherein determining the scaling factor based on the determined first and second numbers comprises selecting the scaling factor such that it produces substantially equal estimated signal to interference ratios for signals modulated according to the first and second codes.

14. The method according to Claim 1, wherein concurrently transmitting the first coded signal and a second coded signal representing the interference-compensated information symbol encoded according to a second code comprises concurrently transmitting the first coded signal and the second coded signal in a wireless communications medium from at least one wireless base station.

15. The method according to Claim 2, wherein the codes of the first group of codes are orthogonal to one another, and wherein the codes of the second group of codes are orthogonal to one another.

16. The method according to Claim 2 wherein the set of quasi-orthogonal codes comprises a set of quasi-orthogonal spreading codes.

17. In a wireless communications system in which at least one base station is operative to transmit on respective channels defined by respective spreading codes selected from a set of quasi-orthogonal spreading codes, the set of quasi-orthogonal spreading codes including a first group of orthogonal spreading codes and a second group of orthogonal spreading codes, a method of transmitting comprising :

generating an interference-compensated information symbol from a source information symbol based on knowledge of an information symbol and a code from the first group of codes used to generate a first coded signal; and

concurrently transmitting the first coded signal and a second coded signal representing the interference-compensated information symbol encoded according to a code from the second group of codes.

18. The method according to Claim 17, wherein generating an interference-compensated information symbol from a source information symbol based on knowledge of an information symbol and a code from the first group of codes used to generate a first coded signal comprises :

encoding at least one information symbol according to at least one code from the first group of codes to generate a composite signal;

integrating a product of the composite signal and the complex conjugate of the code from the second group of codes over a symbol interval;

scaling the integrated product by a scaling factor; and

subtracting the scaled integrated product from the source information symbol to generate the interference-compensated information symbol.

19. The method according to Claim 18, wherein scaling the integrated product by a scaling factor is preceded by :

determining a first number of codes from the first group of codes and second number of codes from the second group of codes to be used to transmit information symbols for the symbol interval; and

determining the scaling factor based on the determined first and second numbers.

20. The method according to Claim 17, wherein concurrently transmitting the first coded signal and a second coded signal representing the interference-compensated information symbol encoded according to a code from the second group of codes comprises concurrently transmitting the first and second coded signals from the same base station.

21. A communications system, comprising:

at least one transmitter that generates an interference-compensated information symbol from a source information symbol based on knowledge of an information symbol and a first code used to generate a first coded signal and that concurrently transmits the first coded signal and a second coded signal representing the interference-compensated information symbol encoded according to a second code.

22. The system according to Claim 21, wherein said at least one transmitter comprises:

a composite signal generating circuit that generates a composite signal from at least one information symbol according to at least one code from a first group of codes of a set of quasi-orthogonal codes; and

an interference-compensating coded signal generating circuit that generates the interference-compensated information symbol from the source information symbol, the composite signal and a code from a second group of codes of the set of quasi-orthogonal codes, and that generates the second coded signal from the interference-compensated information symbol according to the code from the second group of codes.

23. The system according to Claim 22, wherein said interference-compensating coded signal generating circuit integrates a product of the composite signal and the complex conjugate of the code from the second group of codes over a symbol interval, scales the integrated product by a scaling factor, and subtracts the scaled integrated product from the source information symbol to generate the interference-compensated information symbol.

24. The system according to Claim 23, wherein said interference-compensating coded signal generating circuit determines respective first and second numbers of codes from the first group of codes and codes from the second group of codes to be used to transmit information symbols for the symbol interval and determines the scaling factor based on the determined first and second numbers.

25. The system according to Claim 21, wherein said at least one transmitter comprises at least one wireless transmitter positioned at a wireless base station.

26. The system according to Claim 25, wherein said at least one wireless base station comprises a single wireless base station that concurrently transmits the first and second coded signals.

27. The system according to Claim 22, wherein the codes of the first group of codes are orthogonal to one another, and wherein the codes of the second group of codes are orthogonal to one another.

28. The system according to Claim 22 wherein the set of quasi-orthogonal codes comprises a set of quasi-orthogonal spreading codes.

29. A transmitting station, comprising:

means for generating an interference-compensated information symbol from a source information symbol based on knowledge of an information symbol and a first code used to generate a first coded signal; and

means for concurrently transmitting the first coded signal and a second coded signal representing the interference-compensated information symbol encoded according to a second code.

30. The transmitting station according to Claim 29, further comprising:

means for generating a composite signal from at least one information symbol according to at least one code from a first group of codes of a set of quasi-orthogonal codes;

wherein said means for generating an interference-compensated information symbol from a source information symbol comprises means for generating an interference-compensated information symbol from the source information symbol, the composite signal and a code from a second group of codes of the set of quasi-orthogonal codes; and

wherein said means for concurrently transmitting comprises means for transmitting a second coded signal representing the first interference-compensated information symbol encoded according to the code from the second group of codes.

31. The transmitting station according to Claim 30, wherein said means for generating the interference-compensated information symbol comprises:

means for integrating a product of the composite signal and the complex conjugate of the code from the second group of codes over a symbol interval;

means for scaling the integrated product by a scaling factor; and

means for subtracting the scaled integrated product from the source information symbol to generate the interference-compensated information symbol.

32. The transmitting station according to Claim 31, further comprising:

means for determining respective first and second numbers of codes from the first group of codes and codes from the second group of codes to be used to transmit information symbols from the transmitting station for the symbol interval; and

means for determining the scaling factor based on the determined first and second numbers.

33. A wireless communications base station, comprising:

an interference-compensating transmitter operative to transmit on respective channels defined by respective spreading codes selected from a set of quasi-orthogonal spreading codes, the set of quasi-orthogonal spreading codes including a first group of orthogonal spreading codes and a second group of orthogonal spreading codes, said transmitter further operative to generate an interference-compensated information symbol from a source information symbol based on knowledge of an information symbol and a code from the first group of codes used to generate a first coded signal and to concurrently transmit a second coded signal representing the

interference-compensated information symbol encoded according to a code from the second group of codes.

34. The base station according to Claim 33, wherein said transmitter comprises:

a composite signal generating circuit that encodes at least one first information symbol according to at least one code from the first group of codes to generate a composite signal; and

an interference-compensating coded signal generating circuit that integrates a product of the composite signal and the complex conjugate of the code from the second group of codes over a symbol interval, scales the integrated product by a scaling factor, and subtracts the scaled integrated product from the source information symbol to generate the interference-compensated information symbol.

35. The base station according to Claim 34, wherein said interference-compensating coded signal generating circuit determines a first number of codes from the first group of codes and a second number of codes from the second group of codes to be used to transmit information symbols from the base station for the symbol interval and determines the scaling factor based on the determined first and second numbers.

36. The base station according to Claim 33, wherein said transmitter concurrently transmits the first and second coded signals.